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EXAMINER
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LOPEZ, CARLOS N

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/934,361

Applicant(s)

ANDERSON ET AL.

Examiner

Carlos Lopez

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 22-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4IDS. 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of claims 1-21 and 35 on 12/03/03 is acknowledged.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: Claims 5 is not a complete sentence, it lacks a period and a conjunction such as "or" or "and".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, "the one or more outer cladding layers" lacks antecedent basis. In claims 18-19, "the silica substrate tube" lacks antecedent basis.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,5,8-9, 13-17, 20 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Le Sergent (US 5,364,429). Le Sergent discloses making an optical fiber by the MCVD method wherein core dopants are deposited into a substrate tube (Col. 3, lines 30ff). The fiber has a core diameter 2a doped with aluminum or germanium, and cladding as noted by annulus e in Le Sergent's disclosed figure which is lightly doped. Applicant's specification in page 6 notes that a fluorine containing zone 120 acts as a "reservoir" outside of the core, hence it is deemed that the claimed "fluorine reservoir" is only a fluorine containing zone. Thus the claimed fluorine reservoir is noted by an annulus of width c of Le Sergent. Le Sergent's figure shows that the optical fiber made, inherently is drawn from a substrate tube having its fluorine reservoir at a higher concentration than its core and cladding as shown by the refractive index profile of the manufactured fiber.

As for claim 8, the regions of high fluorine concentration (annulus C deemed as the claimed fluorine reservoir) and lightly doped regions as shown by annulus e

collectively deemed by Le Sergent as the "cladding", have a fluorine concentration of at most 1% (Col. 2, lines 65ff).

As for claims 13-17 and 20-21, the claimed concentrations are encompassed by the disclosed concentration of claims 4 and 5 of Le Sergent.

As for claim 9, the core may have rare earth dopants (Col.3, line 44).

Claims 1-5 and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Edvold et al (US 2002/0159735 A1). Edvold discloses making a DCF by the MCVD method wherein core dopants are deposited into a substrate tube. The DCF has a core 12, fluorine reservoir 14, and claddings 16 and 18, with suitable dopants. In one DCF design, the core 12 represented by pike 22 is doped with germanium (Ge), fluorine reservoir 14 represented by trench 24 is doped with fluorine (F), and the second cladding region represented by ridge 26 is doped with germanium and fluorine (G/F) (See paragraphs 19-20 and 26). To obtain a sufficiently deep trench 24 on either side of the core 22, the first cladding region 14 is doped with a relatively high concentration of fluorine dopant meeting the definition of Applicant's specification in page 6, which notes that a fluorine containing zone 120 acts as a "reservoir" outside of the core. The manufactured fiber having its fluorine reservoir at a higher concentration than its core and cladding as shown by the refractive index profile of figure 2 is inherently drawn from a substrate tube having a fluorine reservoir at a higher concentration than its core and cladding deposited layers.

Edvold fails to disclose fluorine in the core hence meeting claims 2-4.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as unpatentable ~~z~~ over Edvold et al (US 2002/0159735 A1). As noted by Edvold fluorine starts to diffuse at a much lower temperature than the typical temperatures reached during fusion splicing, a significant amount of fluorine diffusion may occur during a typical fusion splicing operation. This diffusion results in a relatively high splice loss unless very short fusion times are used. Edvold is silent disclosing a barrier layer to prevent diffusion of the fluorine contamination the core. However, Examiner takes official notice that providing barrier layers is well known in the art to prevent diffusion of the dopants and facilitate core deposition as evidenced by Abe EPO 0091738 page 5. At the time the invention was made it would have been obvious to a person of ordinary skill in the art to provide a barrier layer in the cladding or the core of Edvold MCDV method since Examiner takes official notice that inserting barrier layers prevents the diffusion of dopants.

Claims 10-12 are rejected under 35 U.S.C. 103(a) as unpatentable s over Le Sergent (US 5,364,429). Le Sergent is silent specifying the claimed core composition but does note that rare earth dopants in the core provide improved optical fibers having reduced thermomechanical stresses (Bridging paragraph of Col. 3-4). Thus at the time

the invention was made it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have conducted routine experiments to determine the optimum composition of the core as an obvious optimization of result-effective variables which would render the resultant optical fiber with reduced thermomechanical stresses.

As for claim 12, fluorine would be added to the core to obtain the desired index of refraction as desired.

Claims 1-5, 8 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over by Abe (EP 0091738). Abe discloses a multimode optical fiber having a cladding 12, a fluorine reservoir 16, and a core 14 (First paragraph on Page 5). As noted by Abe, the only region having fluorine is the fluorine reservoir 16. Therefore, the reservoir has a fluorine concentration higher than the core or the inner most cladding layer. The multimode optical fiber is made by well-known methods such as depositing a doped material on the inside of a substrate tube as claimed by applicant. The substrate tube having the deposited soot for which consequently is made into the fiber disclosed by Abe, would inherently or at the least be obvious to a person of ordinary skill in the art, that said substrate tube have or be formed to have the same corresponding radial chemical profile as the resultant optical fiber. Thus the claimed steps of depositing various cladding layers with different fluorine concentration inside a substrate tube as recited in steps B-D would inherently or at the

least be obvious to a person of ordinary skill in the art be performed by Abe in order to produce the disclosed multimode optical fiber.

As for claim 5, the alternative methods claimed are conventionally well known in the art (See US 6571582).

As for claim 8, as noted by Abe, the concentration of the fluorine is sufficient to lower the refractive index of the reservoir 16 hence the fluorine amount at the very least be .7% mole.


### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References C-J in PTO-892 have been cited to show the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1190. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
STEVEN P. GRIFFIN  
SUPERVISORY PATENT EXAMINER  
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